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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,354	06/29/2001	Karl-Heinz Wienand	927-077US (P09686 US)	2262

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2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103-7013

EXAMINER

DEJESUS, LYDIA M

ART UNIT PAPER NUMBER

2859

DATE MAILED: 03/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/896,354

Applicant(s)

WIENAND ET AL.

Examiner

Lydia M. De Jesús

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9. 6) ☐ Other:

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DETAILED ACTION

Priority

1. The translation of German Patent Application No. 100 311 123.5-52 submitted by Applicant on December 23, 2002 has been placed of record in the application and reviewed by the examiner. In accordance with 37 CFR 1.55, the submission of said translation overcomes the rejections to claims 1-8 relying upon U.S. Patent Application Publication No. 2002/0071475 presented in the previous Office action.

Information Disclosure Statement

2. The supplemental information disclosure statement filed by Applicant on December 23, 2002 to replace the information disclosure statement filed January 30, 2002 has been placed of record and the references cited therein have been considered. Applicant's cooperation in submitting copies of the listed documents is greatly appreciated. A copy of the supplemental information disclosure is enclosed in this Office action for Applicant's records.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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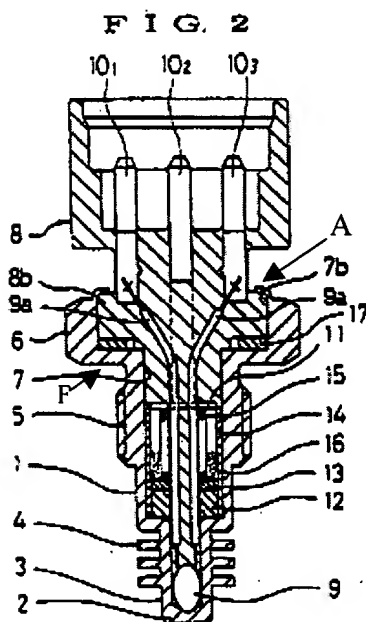
the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1- 3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noma et al. [U.S. Patent 5,660,473, hereinafter Noma] in view of Shoji et al. [U.S. Patent 6,297,723 B1, hereinafter Shoji].

Noma discloses a sensor for detecting a temperature of a fluid in the hollow space of a housing, comprising: a temperature-measuring element [thermistor 9] connectable to an evaluation device via a plug arrangement [8b] and arranged in a protective tube [1] of a sensor housing, which is closed at one end [2], and a connection piece [8] firmly attached to the sensor housing, the protective tube [1] being adapted to project at least with its tip into an opening of the hollow space housing, as shown in Figure 1, where it can be sealed off from outside atmosphere using an elastic O-ring/gasket [18], as shown in Figure 4, wherein the measuring element [9] is arranged in a tip section [2] of said protective tube [1] and is connected via lead wires [9a] to the plug arrangement [8b] positioned on the opposite end of the protective tube, wherein the plug arrangement [8b] is surrounded by a screw sheath/nut [3] of the sensor housing, which is firmly connected to the protective tube and which is provided with a threading, as shown in Figure 1, adapted to project into the hollow space housing for purposes of mounting, the screw sheath having a flange [labeled F in a copy of Figure 2 of Noma shown below] extending in a radial direction, which provides a press on surface for an O-ring/gasket [18], as shown in Figure 4, for sealing off an opening of the hollow space housing. Said sensor is adapted for measuring a temperature in a flowing medium (see Fig. 1).

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As shown in Figure 2 of Noma provided below, said screw sheath/unit [3] is provided with an annular edge [labeled A] arranged coaxially with the threading, on a side of the screw sheath/nut [3] facing away from the protective tube, for attaching the connection piece [8], and it is considered that said annular edge is capable of performing the function of stopping the connection piece [8] in its plug-in position against axial shifting.



With respect to the limitations in claim 1 related to a circuit board and the limitations of claim 5: Noma fails to disclose said temperature measuring element being arranged on a circuit board such the measuring element is arranged in a tip region of the protective tube on one end of a longitudinally extending circuit board and connected via strip conductors to the plug arrangement positioned on the opposite end of the circuit board. Noma also fails to disclose said measurement element mounted on a circuit board and embedded in a heat conducting paste.

However, Shoji shows a thermistor [23] mounted on a circuit board/ceramic substrate [22] provided with strip conductors [24]. Shoji teaches arranging said measurement element

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arranged on said circuit board [22] in a tip region of a protective tube [21] on one end of the longitudinally extending circuit board and connected via said strip conductors to a plug arrangement [28] positioned on the opposite end of the circuit board, as shown in Figure 9. Said Measuring element is embedded in a heat conducting paste (see lines 21-25 of column 3)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensor housing disclosed by Noma to accommodate in place of the thermistor mounting configuration of Noma, a thermistor mounted on a circuit board and provided with strip conductors to be connected with the plug arrangement and embedded in a heat conducting paste, as taught by Shijo, in order to provide electrical insulation to the conductor strips as well as good supporting capability under a high temperature environment (see lines 60-67 of column 3).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noma in view of Shijo as applied to claims 1-3 and 6-7 above, and further in view of Ciavarino et al. [hereinafter Ciavarino].

Noma and Shijo together disclose a sensor as claimed, as stated above in paragraph 5, but fail to disclose said connection piece being secured against turning relative to the screw sheath/nut [3] of the sensor housing by locking beads and/or recesses.

Ciaravino teaches the use of recesses [18] in combination with bead/tabs [130] to prevent rotation of a measuring element [rings 92] with respect to the probe housing.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add locking beads and corresponding recesses to the interface between the

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connection piece and the screw sheath of the sensor of the combination of Noma and Shijo, as suggested by Ciaravino, in order to simplify installation.

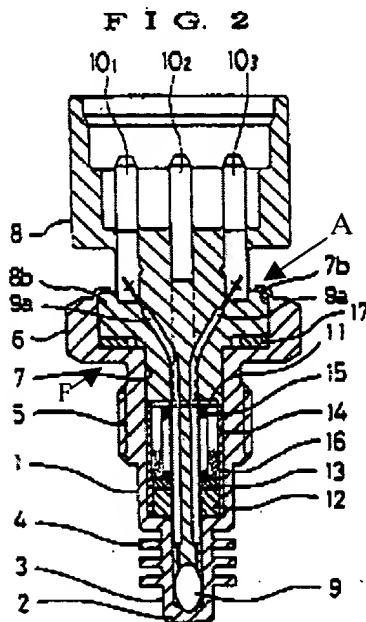
7. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noma in view of Schmermund [U.S. Patent 6,341,892].

Noma discloses a sensor for detecting a temperature of a fluid in the hollow space of a housing, comprising: a temperature-measuring element [thermistor 9] connectable to an evaluation device via a plug arrangement [8b] and arranged in a protective tube [1] of a sensor housing, which is closed at one end [2], and a connection piece [8] firmly attached to the sensor housing, the protective tube [1] being adapted to project at least with its tip into an opening of the hollow space housing, as shown in Figure 1, where it can be sealed off from outside atmosphere using an elastic O-ring/gasket [18], as shown in Figure 4, wherein the measuring element [9] is arranged in a tip section [2] of said protective tube [1] and is connected via lead wires [9a] to the plug arrangement [8b] positioned on the opposite end of the protective tube, wherein the plug arrangement [8b] is surrounded by a screw sheath/nut [3] of the sensor housing, which is firmly connected to the protective tube and which is provided with a threading, as shown in Figure 1, adapted to project into the hollow space housing for purposes of mounting, the screw sheath having a flange [labeled F in a copy of Figure 2 of Noma shown below] extending in a radial direction, which provides a press on surface for an O-ring/gasket [18], as shown in Figure 4, for sealing off an opening of the hollow space housing. Said sensor is adapted for measuring a temperature in a flowing medium (see Fig. 1).

As shown in Figure 2 of Noma provided below, said screw sheath/unit [3] is provided with an annular edge [labeled A] arranged coaxially with the threading, on a side of the screw

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sheath/nut [3] facing away from the protective tube, for attaching the connection piece [8], and it is considered that said annular edge is capable of performing the function of stopping the connection piece [8] in its plug-in position against axial shifting.



With respect to the limitations in claim 1 related to a circuit board and the limitations of claim 5: Noma fails to disclose said temperature measuring element being arranged on a circuit board such the measuring element is arranged in a tip region of the protective tube on one end of a longitudinally extending circuit board and connected via strip conductors to the plug arrangement positioned on the opposite end of the circuit board. Noma also fails to disclose said temperature measuring element being a temperature dependent resistor.

However, Schmermund shows temperature dependent resistor [15] i.e., a thin film platinum resistor [16], mounted on a circuit board/ceramic substrate [17] provided with strip conductors [18,19]. Shoji teaches enclosing said measurement element in a protective tube [26] mounted on one end of the longitudinally extending circuit board as shown in Figures 1 and 2.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensor housing disclosed by Noma to accommodate in place of the thermistor mounting configuration of Noma, a temperature dependent resistor mounted on a circuit board and provided with strip conductors to be connected with the plug arrangement, as taught by Schmermund, since both are alternate sensor configurations that will perform the same function, if one is replaced by the other, of providing an electrical signal that is a function of temperature, and further since the sensor arrangement of Schmermund can be purchased at a reasonable cost and is stronger i.e., rugged enough for handling (see lines 21-42 of column 1).

Response to Arguments

8. Applicant's arguments, filed December 23, 2002, with respect to the rejection(s) of claim(s) 1-8 under Betzner have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Noma et al..

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gustin discloses a receptacle for holding a sensing device. Poor et al. discloses a gas analysis system for furnaces and the like including a oxygen sensor [55] enclosed in sensor housing [44] shown in Figure 2.JP61142430 A also discloses a related apparatus.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lydia M. De Jesús whose telephone number is (703) 306-5982. The examiner can normally be reached on 12:30 to 8:00 p.m., Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

LDJ
March 8, 2003



Diego F.F. Gutierrez
Supervisory Patent Examiner
Technology Center 2800